

WHAT IS CLAIMED IS:

1.       A catheter comprising:
  - 5           an elongated catheter body having a proximal end, a distal end and at least one lumen extending longitudinally therethrough;
  - 10          a control handle attached to the proximal end of the catheter body;
  - 15          a mapping assembly mounted at a junction at the distal end of the catheter body and comprising at least two elongated flexible spines, each spine having a proximal end attached at or near the distal end of the catheter body and a free distal end, wherein each spine carries at least one electrode along its length; and
  - 20          at least two spine puller wires, each spine puller wire corresponding to one of the at least two spines, wherein each spine puller wire has a proximal end anchored in the handle and a distal end anchored at or near the distal end of its corresponding spine such that, in use, longitudinal movement of a spine puller wire relative to the catheter body results in deflection of the spine to which the spine puller wire is anchored.
- 25       2.       The catheter of claim 1, wherein each spine comprises a tip electrode mounted at the distal end of the spine.
- 30       3.       The catheter of claim 1, wherein each spine comprises an atraumatic tip mounted at the distal end of the spine.
- 35       4.       The catheter of claim 1, wherein each spine comprises a plastic cap mounted at the distal end of the spine.
- 40       5.       The catheter of claim 1, wherein each spine further comprises at least one location sensor.
- 45       6.       The catheter of claim 1, wherein the number of spines ranges from two to twelve.

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7. The catheter of claim 1, wherein the number of spines ranges from three to eight.

5        8. The catheter of claim 1, wherein the catheter further comprises a  
catheter puller wire having a proximal end anchored in the control handle and a  
distal end anchored at or near the junction of the mapping assembly and the  
catheter body such that, in use, longitudinal movement of the catheter puller  
wire relative to the catheter body results in deflection of the catheter body at or  
10      near the junction.

9. The catheter of claim 1, wherein each electrode has a length up to about 2 mm.

15        10. The catheter of claim 1, wherein each spine carries a plurality of electrodes, and the distance between electrodes on each spine ranges from about 1 mm to about 10 mm.

20            11. The catheter of claim 10, wherein the distance between electrodes  
on each spine ranges from about 2 mm to about 5 mm.

12. The catheter of claim 1, wherein each spine carries from 2 to about 20 electrodes.

25        13. The catheter of claim 1, wherein each spine carries from 3 to 10  
electrodes.